



**Fitzpatrick Structural Engineering, P.C.**

219 N. Main • Ann Arbor • MI • 48104

734-769-0320 • FAX 734-769-3015

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Mr. Tim McGahey

AKT Peerless Environmental Services

607 Shelby Street, Suite 900

Detroit, MI 48226

RE: 3105 Holbrook, Hamtramck, Michigan

Visual Structural Evaluation

Dear Mr. Tim McGahey,

It was a pleasure meeting Ms. Deanna Hutsell and Ms. Rebecca Bino Savage on site of the building located at 3105 Holbrook, Hamtramck, Michigan. Mr. Vincent Peruchietti of the City of Hamtramck, the current building owner's representative and a plumbing inspector were also present. The City of Hamtramck is considering purchasing the building to be used as a historical museum. I was asked to review the building for the potential of an elevator installation. A brief visual review of the entire structure was completed and observations made are discussed below. For the purposes of this report, the front door is considered to be in the south elevation of the building.

The cornerstone on the building dates the brick masonry building to 1925. The first floor structure was observed to be a concrete slab on steel joist system spanning to either bearing walls or assumed steel beams and posts. The beams and posts are covered in finishes and could not be verified. Dropped beams in the first floor ceiling were observed, similar to the conditions observed in the basement ceiling. The second floor structure is assumed to be of the same construction type. Existing architectural drawings (date unknown, estimated to be 1940s based on paper and drafting method) of an early renovation of the building confirm the structural system. These drawings describe the roof structure as a dimension lumber framed roof framing to a truss or beam system clear spanning between the exterior walls to support the dimensional wood rafters.

*Basement:*

Moisture was evident at the northwest corner of the basement, and is most likely related to a downspout located on the exterior near this corner. The brick masonry foundation walls were powdery to the touch with efflorescence observed on the brick wall. The deterioration is relatively new; the brick wall can be cleaned and repointed if the water source is removed or re-routed away from the basement wall.

Severe deterioration (rusting) of the first floor steel structure was observed in the southeastern basement room ceiling. This area of the floor will require rebuilding, or perhaps the new elevator could be located in this area of required demolition?

Shrinkage cracking was observed in a grid like pattern in the basement concrete slab floor. The cracks may also be related to expected differential settlement of the column and bearing wall foundations and relate to the original construction of the slab. Unless they are observed to change in width or length, or increase in number, the cracks can be sealed to prevent any potential moisture from coming up through the floor.

*First and Second Floors:*

The structural members at these levels were mainly covered with wall, ceiling and floor finishes making them inaccessible to the visual survey. However, little distress, except as noted below, was observed in the finishes.

At nearly all window openings, the plaster at the window openings has deteriorated and will require replacement. The masonry behind this plaster will need to be verified as it may also require repointing or replacement of isolated bricks.

At the second floor level, cracking was observed in the interior walls that are perpendicular to the front southern wall of the building. The cracking can simply be old plaster that has lost its keys, or may be indicating movement of the southern wall from wind pressures. The plaster finishes on the walls may have been acting as partial restraint for the southern wall from pulling away from the building. In addition, a large vertical crack was observed on the interior surface of the south wall directly above the keystone in the large upper level arched window. This crack is indicating that the masonry arch is beginning to fail. Further investigation into the stability of the south wall is recommended. I suspect the south wall simply requires repointing on the interior and exterior. If the interior walls are to be removed or altered for the adaptive reuse of the building, a structural engineer should be contacted to verify the stability of the south wall without these interior walls.

*Exterior:*

On the exterior, the brick walls are in good condition. There is some cracking that is mainly related to the steel window lintels oxidizing (rusting). As the steel rusts it expands and that force is large enough to move the brick and crack the mortar joints. All of the steel lintels are to be replaced in kind, and the brick in the associated areas rebuilt as required. Proper mortar type and replacement bricks should be used so as not to cause any future distress in the masonry wall.

On the east elevation, a vertical crack was noted at the top end of the gutter system. The crack can be repointed and monitored for further movement or re-cracking. The crack appears to be related to the gutter system, which should be repaired to provide proper drainage down and away from the building. It may also relate to the renovation of the building described in the architectural plans provided. A masonry wall and chimney were removed in this area. Further investigation is recommended ideally; else the crack can be repointed and monitored for further cracking.

On the south elevation, the large masonry arched window is lined with decorative stone. Some of these stones are failing and cracking. This is related to the vertical crack observed on the interior above the masonry arch. Proper masonry restoration can arrest this movement.

*Elevator:*

An elevator can be installed in this building from a structural standpoint relatively easily. Underpinning of the foundation will be required if the elevator is to service the basement, assuming the elevator will be located along an exterior wall. The location of the elevator should also be coordinated with the existing roof and floor structures to miss any large supporting beams or other support members if possible to simplify construction and minimize project costs. Ideal location, structurally, is in the area of the deteriorated first floor steel joists in the southeast corner of the building. However, other logistics such as access and layout of the space for the new use must be considered.

I trust that this serves your needs at this time. It was a pleasure working with you, and I wish the City of Hamtramck all the success in establishing a historical museum. Please do not hesitate to contact me if you have any questions or concerns, or if further investigation and design services are required for the renovation.

Respectfully,

Cheryl Early, P.E.  
Associate Engineer